

Remarks

The above-referenced application has been reviewed in light of the Examiner's Office Action dated January 12, 2006. Claims 8, 11, 12 and 21 have been allowed. The Examiner's allowance of these claims is gratefully acknowledged. By the present amendment, Claims 1, 3, 4, 13, 15, 17, 19 and 22 have been amended, and new Claims 23-31 have been added. While some of the amendments are of a primarily typographical and/or grammatical nature, support for the other amendments may be found in the application as originally filed. No new matter has been added. Thus, Claims 1-4, 6-8 and 11-31 are currently pending in this application. The Examiner's reconsideration of the rejections is respectfully requested, particularly in view of the above amendments and the following remarks.

In accordance with the Office Action, Claims 1-4, 6, 7 and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over United States Patent No. 6,271,816 to Jeong et al. in view of United States Patent No. 6,670,953 to Ozawa. Claims 1, 3, 4 and 13 have been amended, and new Claims 23-25 have been added.

"To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Neither the '816 to Jeong et al. nor the '953 to Ozawa, whether taken alone or in combination, teaches or suggests all of the elements recited in amended Claim 1.

Amended Claim 1 recites, *inter alia*, "A liquid crystal display, comprising ... a

data line sharing switch having a plurality of **commonly controlled** switching devices, each of which is formed between each of the adjacent data lines, respectively ... wherein the first thin film transistors are disposed between the data line sharing switch and the data driver” (**emphasis added**). Support for the amendments to Claim 1 is present in the application as originally filed (see, e.g., Application at page 5, line 20 through page 6, line 21; Figure 3).

The ‘816 to Jeong et al. is generally directed towards an active matrix having a particular combination of discrete capacitors (110) and switches (112) connected to the same column electrodes as an active column driving circuit (see, e.g., Jeong at Abstract; Figure 1A). Jeong et al. generally address power savings as opposed to increased operational speed as addressed by Applicant. As correctly indicated by the Examiner, Jeong et al. fail to teach or suggest “wherein the first thin film transistors are disposed between the data line sharing switch and the data driver”.

In addition, Jeong et al. fail to recognize the disadvantages of high line capacitance in the columns, much less the undesirably increased effects of line capacitance on operational speed in larger sized displays, as accurately recognized by Applicant (see Application at page 2, lines 14-23; Figures 1 and 2). Thus, it is respectfully submitted that Jeong et al. teach away from Applicant’s claimed invention by intentionally adding line capacitance (Jeong Figure 1A, line capacitors 110), which would only exacerbate the prior disadvantage of high line capacitance addressed by Applicant’s invention (see Application at page 7, line 6 through page 8, line 2; Figures 3 and 4).

The '953 to Ozawa is generally directed towards an active matrix with two sets of switches for detecting defective or open-circuit columns. Ozawa teaches that only one of the two sets of alternating switches can be activated at a time. Thus, the switches of Ozawa are not commonly controlled. This is because the first set can recognize a defect in a pair of columns connected by a first switch, and the second set can subsequently narrow the defect to one or the other of the pair. If the two sets of switches were commonly controlled, the detection and narrowing of Ozawa could not be performed.

The Examiner relies on Ozawa to show "wherein the first thin film transistors are disposed between the data line sharing switch and the data driver". This reliance is rendered moot by Applicant's amended Claim 1 because the switches used by Ozawa are inapposite to those either used by Jeong et al. or as now claimed by Applicant. That is, Ozawa fails to teach or suggest "a data line sharing switch having a plurality of **commonly controlled** switching devices, each of which is formed between the adjacent data lines" (**emphasis added**).

The switches of Ozawa are not commonly controlled. That is, Ozawa's first set of switches does not share a common control (e.g., gate terminal) with Ozawa's second set of switches. In addition, according to the present disclosure, before applying a gate-on voltage to each gate line, adjacent data lines are connected for a predetermined time by turning on the switching device 410 of the data line sharing switch 400. Then, the charge sharing effect between the data lines charged with data voltages of different polarities increases or decreases the voltages of the data lines close to a common voltage (V_{com}), which is towards the

middle of the swing voltages.

The switches of Ozawa are for detecting defective or open-circuit columns. Ozawa is silent on any further detail with respect to any relevant functions of the switching devices as compared with those of the present disclosure. Therefore, the switches of Ozawa are both structurally and functionally different from the switching devices of Applicants' present disclosure.

Thus, Ozawa fails to cure at least the above-described deficiencies of Jeong et al. *Arguendo*, even if Ozawa did cure all deficiencies of Jeong et al., the Examiner has still not satisfied the burden of showing the requisite motivation to combine the two references. "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." MPEP §2143.01 (citing *In re Mills*, 916 F.2d 680). Where the prior art provides no motivation for a given combination, it constitutes improper hindsight to derive the motivation solely from Applicant's own disclosure.

As understood in the art, the goal of power savings, as addressed by Jeong et al., is typically mutually exclusive to the goal of increased operational speed, as addressed by Applicant. The goal of defect detection, as addressed by Ozawa, is inapposite to both since it uses up both time and energy. Thus, the Examiner may face a heightened burden for finding a motivation to combine these disparate references, particularly where their principles of operation diverge.

In the latest Office Action, the Examiner opines that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to

incorporate the thin film transistors are disposed between the data line sharing switch and the data driver as taught by Ozawa in the system of Jeong in order to avoid the density of elements at one end of the matrix display” (Office Action at page 3, lines 11-14).

Applicant respectfully disagrees. First, there has been no showing that the circuit of Jeong et al. suffers from any problems associated with uneven densities of elements. Second, there has been no showing that relocating the switches of Ozawa to the opposite side of the Jeong matrix would increase the overall density at all, much less “avoid the density of elements at one end of the matrix display”. This point is driven home by Applicant’s disclosure, which teaches that the data line sharing switch may use exactly the same type of transistors as the matrix itself. Thus, at least in Applicant’s exemplary embodiment, moving a given row of switching elements or transistors from the top to the bottom of the matrix would have no effect whatsoever on the density of elements. Accordingly, the Examiner’s latest theory for the requisite motivation to combine is fatally flawed and must be withdrawn.

Thus, amended Claim 1 is neither taught nor suggested by Jeong et al. in view of Ozawa, whether taken alone or in combination with any of the other references of record in this case. The Examiner’s withdrawal of this rejection is respectfully requested.

In accordance with the Office Action, Claims 15-18, 20 and 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over United States Patent No. 5,907,314 to Negishi et al. in view of European Publication No. EP 0

315 365 to Wright. Claims 15, 17, 19 and 22 have been amended, and new Claims 26-31 have been added.

Amended Claim 15 recites, *inter alia*, “a first data driver for applying first data voltages to the first data lines; a second data driver for applying second data voltages to the second data lines; a first data line sharing switch having a plurality of first commonly controlled switching devices, each of which is formed between each of the adjacent first data lines, respectively; a second data line sharing switch having a plurality of second commonly controlled switching devices, each of which is formed between each of the adjacent second data lines, respectively; and a sharing signal generator for outputting a first sharing control signal for turning on the first switching devices to connect the adjacent first data lines and a second sharing control signal for turning on the second switching devices to connect the adjacent second data lines, wherein the first thin film transistors are disposed between the first data line sharing switch and the first data driver, and the second thin film transistors are disposed between the second data line sharing switch and the second data driver.”

The '314 to Negishi et al. is generally directed towards a liquid crystal display. As admitted by the Examiner, Negishi et al. fail to teach or suggest not just one, but all of the above-quoted recitations of amended Claim 15.

The Wright reference is generally directed towards a liquid crystal display having sub-matrices. The switching transistor 17 of Wright is connected to the column conductor 2, 2b. However, the switching devices of Applicants' present disclosure are connected to the data lines in the same block. Therefore, Wright

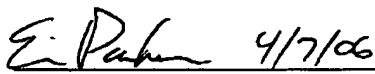
fails to cure the above-described deficiencies of Negishi et al., particularly with respect to “a first data line sharing switch having a plurality of first commonly controlled switching devices, each of which is formed between each of the adjacent first data lines, respectively”.

Thus, amended Claim 15, as well as amended Claim 22 that recites similar language, are neither taught nor suggested by Negishi et al. in view of Wright, whether taken alone or in combination with any of the other references of record in this case. The Examiner’s withdrawal of these rejections is respectfully requested.

Conclusion:

Accordingly, it is respectfully submitted that amended independent Claims 1, 15 and 22 are in condition for allowance for at least the reasons stated above. The Examiner's allowance of Claims 8, 11, 12 and 21 is gratefully acknowledged. Since Claims 2-4, 6-7, 13-14, 16-20 and 23-31 each depend from one of the above claims and necessarily include each of the elements and limitations thereof, it is respectfully submitted that these claims are also in condition for allowance for at least the reasons stated, and for reciting additional patentable subject matter. Thus, each of Claims 1-4, 6-8 and 11-31 is in condition for allowance. All issues raised by the Examiner having been addressed, reconsideration of the rejections and an early and favorable allowance of this case are earnestly solicited.

Respectfully submitted,

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